Nishant Jindal

Sheet 2

Q1 ✓

Q2 → Mid Pt → Vertices

Q3 → AB, BC, AC → collinear.

Q4 $x(y+2)+2(y+2)=0$ & $x+y=-2$

learning $x(y+2)+2(y+2)=0$

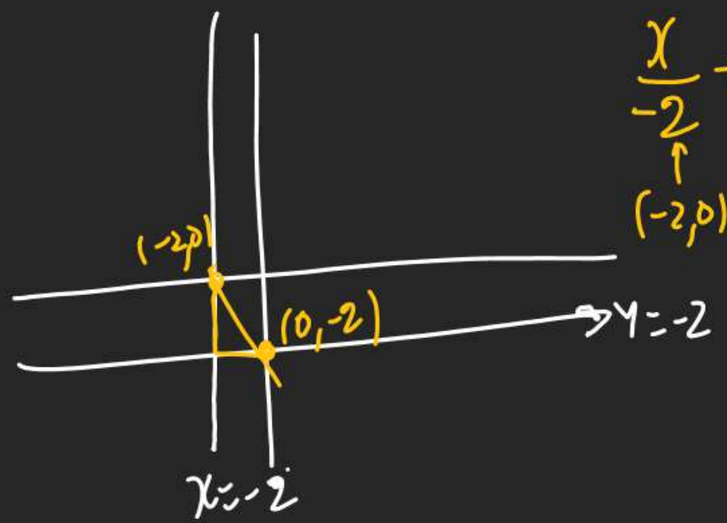
$(y+2)(x+2)=0$

$x=-2$ or $y=-2$

$-x-y=2$

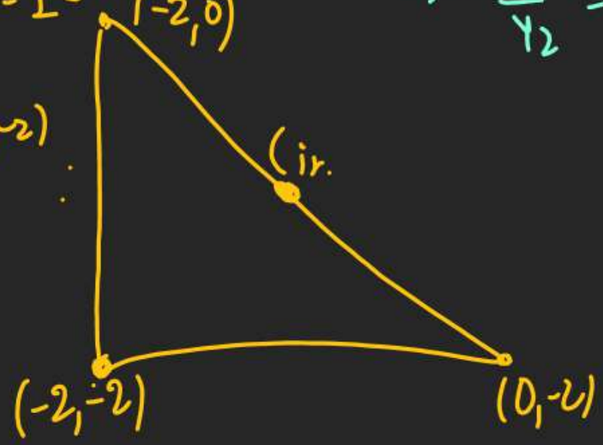
x -ve, y -ve

3rd ∈ 4.



$\frac{x}{-2}+\frac{y}{-2}=1$ (Int)

(-2,0) (0,-2)



(5) $(h,k) \rightarrow a_1b_1$, a_2b_2

$\sqrt{(h-a_1)^2+(k-b_1)^2}=\sqrt{(h-a_2)^2+(k-b_2)^2}$

$a_1^2+b_1^2-2a_1h-2b_1k=-2a_2h-2b_2k+a_2^2+b_2^2$

$2(a_1-a_2)h+2(b_1-b_2)k+a_2^2+b_2^2-a_1^2-b_1^2=0$

$(a_1-a_2)x+(b_1-b_2)y+c=0$

$(3,-4)$ & $(-5,6)$ (y_1, y_2)

$\rightarrow -\frac{y_1}{y_2}=-\frac{(-4)}{6}=\frac{2}{3}$

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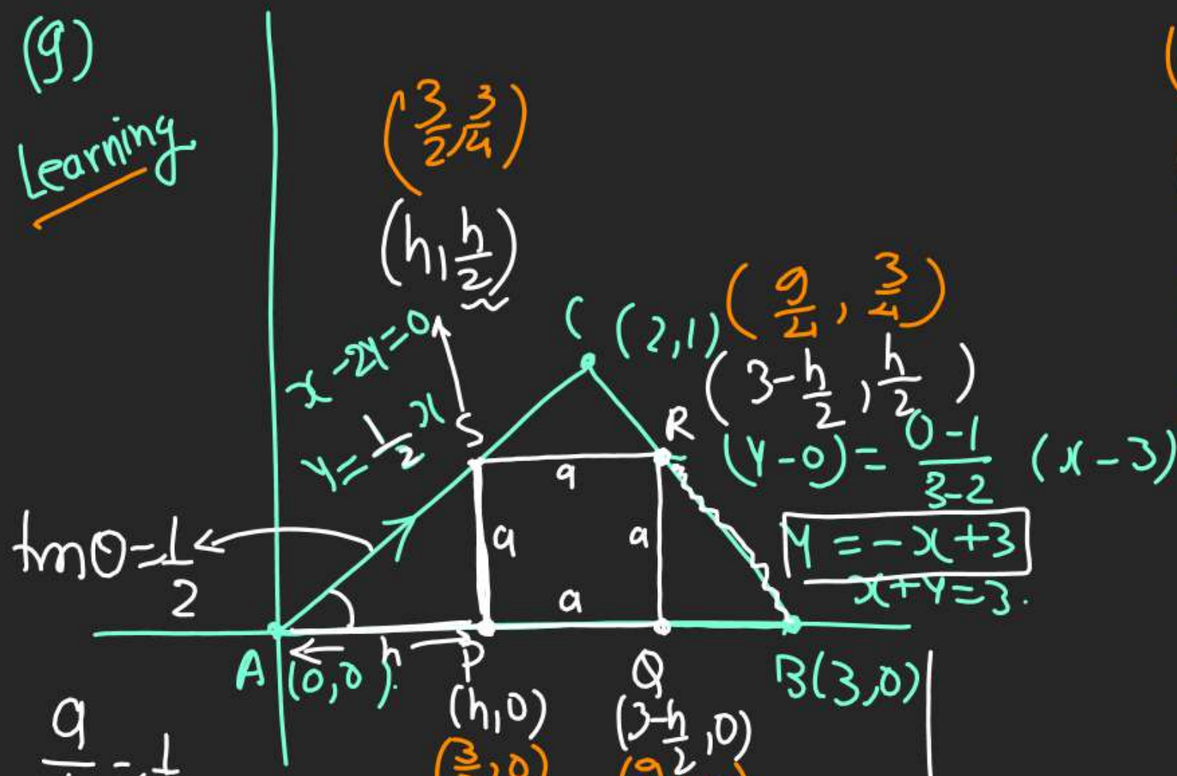
(9)

Learning



$\frac{a}{h}=\frac{1}{2}$

$\Rightarrow h=2a$

$3-\frac{h}{2}-h=a$

$3-\frac{3h}{2}=a$

$3-\frac{3\times 2a}{2}=a$

$\Rightarrow 4a=3$

$a=\frac{3}{4}$

$h=\frac{3}{2}$

(10) Eq^n of A.B (Kal hi Krahai)

(11) hold

(12) hold } v. good

(13) —

(14) Same in Copy

(15) $\frac{1}{2}\begin{vmatrix} 2a & 3a \\ 3b & 2b \\ (& (\\ 2a & 3a \end{vmatrix}=0$

$\frac{1}{a}+\frac{1}{b}=\frac{2}{c}\rightarrow a, c, b \rightarrow HP$

$\frac{1}{a}+\frac{1}{b}=\frac{2}{x}\rightarrow a, x, b \rightarrow HP$

$a, \frac{2c}{5}, b \rightarrow HP$

$(4ab-9ab)+(3b(-2bc)+(3a(-2ac)=0$

$bc+ac=5ab \quad \div abc$

$\frac{1}{a}+\frac{1}{b}=\frac{2}{\left(\frac{c}{5}\right)}$ X

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(16) $ax \pm by \pm c = 0$

(or) $ax \pm by = \pm c$

$ax \pm by = c$

$ax + by = c \rightarrow 1^{st}$

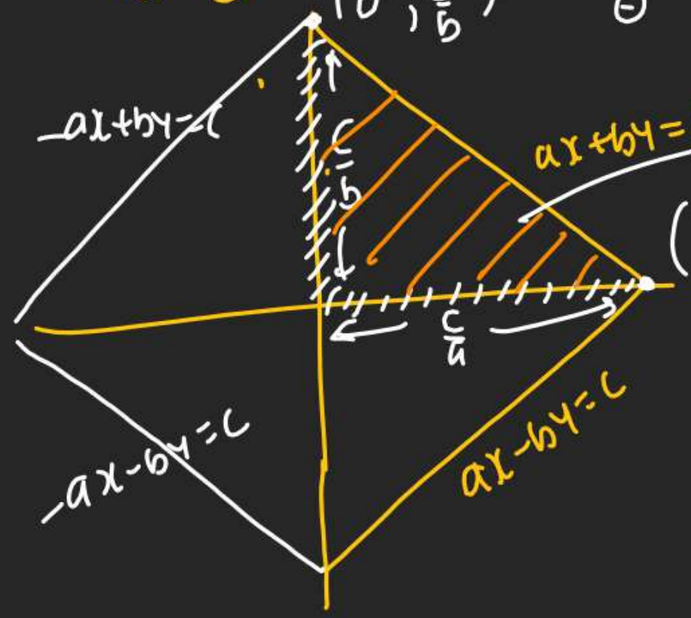
$ax - by = c \rightarrow 4^{th}$

$ax \pm by = -c$

$-ax \mp by = c$

$-ax - by = c \rightarrow 3^{rd}$

$-ax + by = c \rightarrow 2^{nd}$



$\frac{1}{2} \times \frac{c}{a} \times \frac{c}{b} = \frac{c^2}{2ab}$

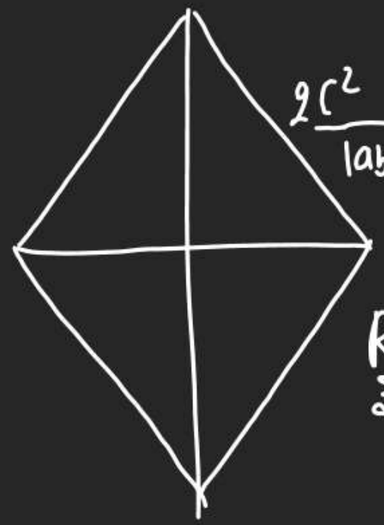
total Area $= \frac{4c^2}{2ab}$

Area $= \frac{2c^2}{|a||b|}$

(16) $\rightarrow a(|x|+b)|y|=c$

$a \neq b$ Rhombus

$a = b$ Sqr.



Rhombus का Area

Q17 Area enclosed by

$2|x|+3|y| \leq 6$

$\frac{|x|}{3} + \frac{|y|}{2} \leq 1$

$\Delta = \frac{2 \times 6^2}{|2||3|} = 12$

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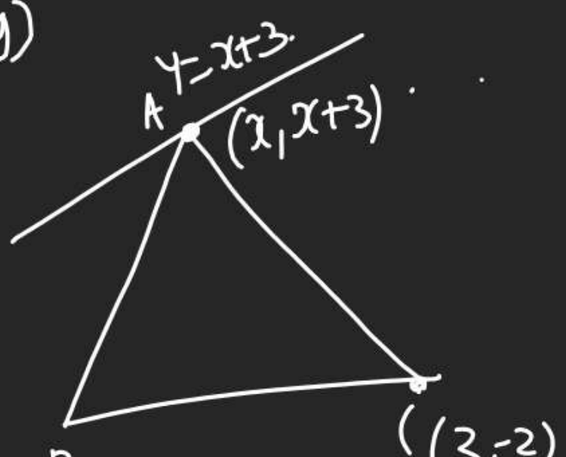
(19)



$$\frac{1}{2}\begin{vmatrix} x & x+3 \\ 2 & 1 \\ 3 & -2 \\ x & x+3 \end{vmatrix} = \pm 5$$

$$\{(x-2x-6)+(-4-3)+(3x+9+2x)\} = \pm 10$$

$$\{-x-6-7+5x+9\} = \pm 10$$

$$4x-4 = \pm 10 \longrightarrow 4x-4=10 \Rightarrow 4x=14 \quad ①$$

$$x = 7/2,\ y = \frac{13}{2}$$

$$4x-4=-10 \Rightarrow 4x=-6 \Rightarrow x = \left(-\frac{3}{2}, \frac{3}{2}\right)$$

(21) Rod.

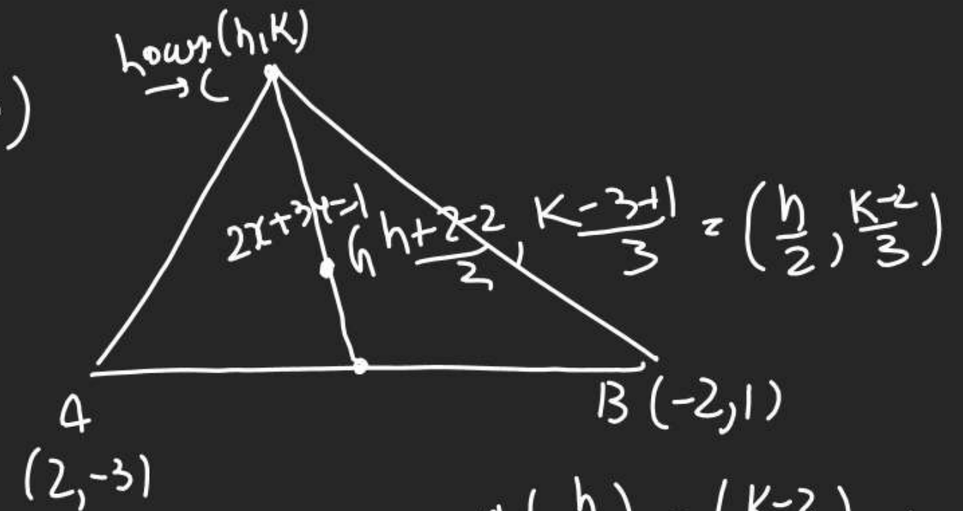
(22) Coby.

(23) Rod

(24) $\sqrt{AB} - \sqrt{BC} = 1$

(25) Done

(26)



$$2\left(\frac{h}{2}\right)+3\left(\frac{k-2}{3}\right)=1.$$

(27) ① $m_{AH} \cdot m_{BC} = -1$

② $m_{BH} \cdot m_{AC} = -1$

} Solve.

28, 29, 30 Sheet 2

बाकी है।

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Q Find EOL PT (2,3) whose x int is double of its y int?

$x_{int} = 2\, y_{int}$

$a = 2b$

① Line → $\frac{x}{a} + \frac{y}{b} = 1$

$\frac{x}{2b} + \frac{y}{b} = 1$

② I+I in P.T. (2,3)

$\frac{2}{2b} + \frac{3}{b} = 1$

$\frac{4}{b} = 1 \Rightarrow b = 4 \Rightarrow a = 8.$

$\therefore \frac{x}{8} + \frac{y}{4} = 1$

Q Find EOL P.T. (4,3) having Sum of Intercept -1.

① $a + b = -1$

② $\frac{x}{a} + \frac{y}{b} = 1$

$\frac{x}{a} + \frac{y}{-1-a} = 1$ P.T. (4,3)

$\frac{4}{a} + \frac{3}{-1-a} = 1$

$-4 - 4a + 3a = -a - a^2$

$-4 - a = -a - a^2 \Rightarrow a = 2 \mid a = -2$

$b = -3 \mid b = 1$

$\frac{x}{2} + \frac{y}{-3} = 1 \quad \Big| \quad \frac{x}{-2} + \frac{y}{1} = 1$

Q If Pt. (3,-4) divide Intercepted Part bet^n axes of a Line in Ratio 2:3 from x Axis then EOL = ?

A = (a,0), B = (0,b) } assume

B (0,b)

3 : 2

(3,-4)

A Intercepted Part

(a,0)

$3 = \frac{3a + 2 \times 0}{5}$

$a = 5$

$-4 = \frac{3 \times 0 + 2b}{5}$

$b = -10$

(0,-10)

$y_{int} = -10$

$x_{int} = (5,0)$

$\frac{x}{5} + \frac{y}{-10} = 1$

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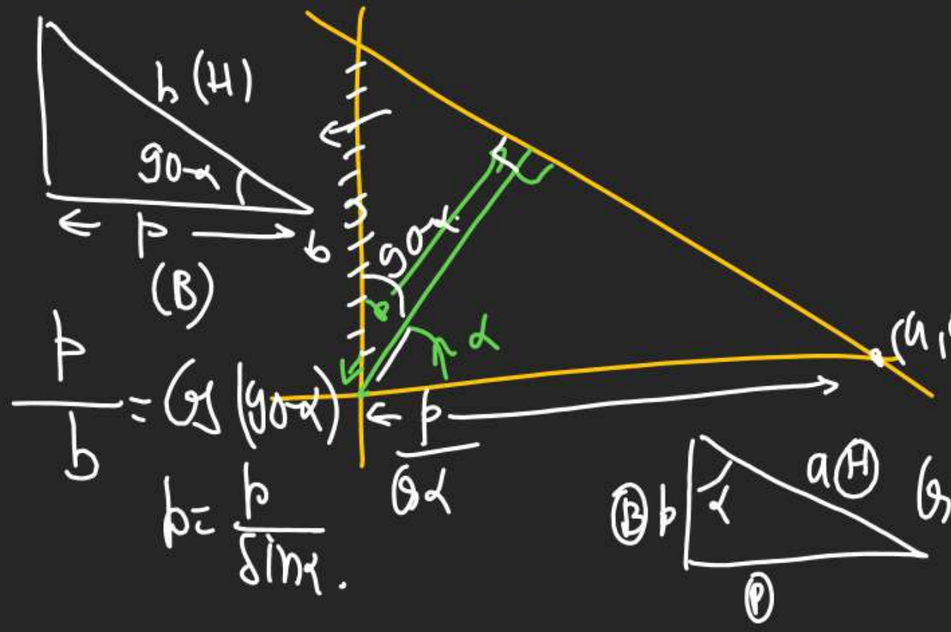
(6) form = Perpendicular form

Normal form of a Line.

A) If Line in a distance p from origin.

& Line joining origin to $\perp^r$ line is making angle α then $\in$ OL is

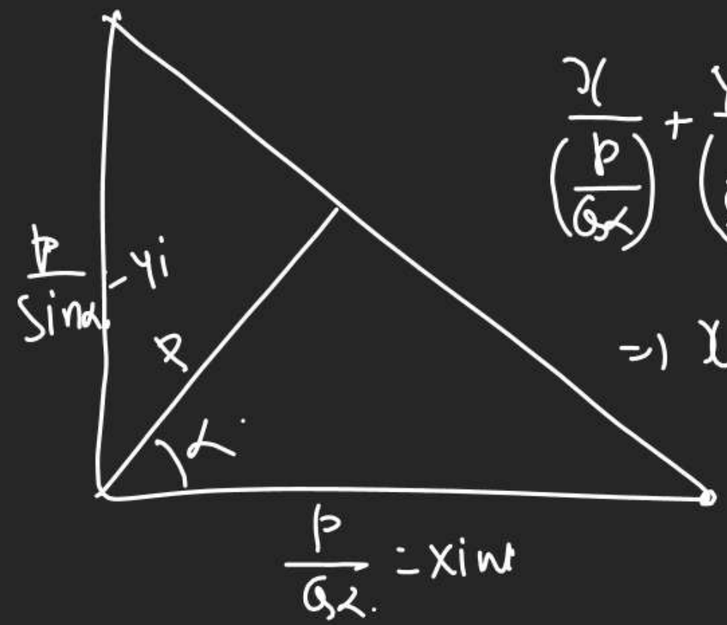
$x\cos\alpha + y\sin\alpha = p$.



$\frac{p}{b} = \cos(90-\alpha)$

$b = \frac{p}{\sin\alpha}$.

$\cos\alpha = \frac{p}{a} \Rightarrow a = \frac{p}{\cos\alpha}$

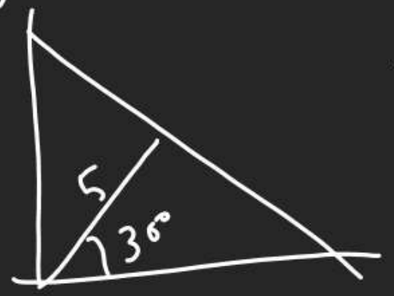


$\frac{x}{\left(\frac{p}{\cos\alpha}\right)} + \frac{y}{\left(\frac{p}{\sin\alpha}\right)} = 1$

$\Rightarrow x\cos\alpha + y\sin\alpha = p$.

Proof.

Q. find $\in$ OL whose distance from origin is 5 Unit & angle made by $+^r$ line is 30°.



$x\cos 30° + y\sin 30° = 5$

$\frac{\sqrt{3}x}{2} + \frac{y}{2} = 5$

$\sqrt{3}x + y = 10$

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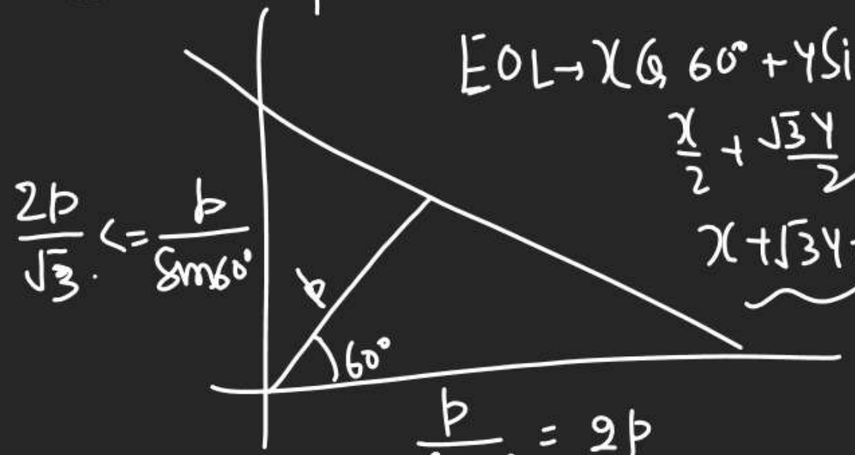
Q Find EOL to whom 1^r from origin is making angle of $60°$ & Δ made by lines & coaxes is $54\sqrt{3}$?



$EOL \rightarrow x\cos 60° + y\sin 60° = 9$

$\frac{x}{2} + \frac{\sqrt{3}y}{2} = 9$

$x + \sqrt{3}y = 18$

$\frac{p}{\cos 60°} = 2p$

$\frac{1}{2} \times 2p \times \frac{2p}{\sqrt{3}} = \pm 54\sqrt{3}$

$p^2 = \pm 81$

$p = \pm 9$

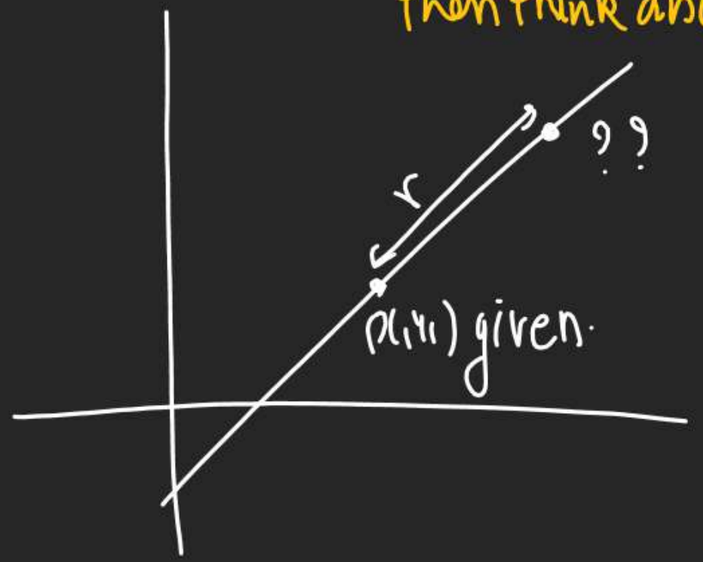
(7) form V.Imp. for difficult Qs

Parametric form of a line.

It is usefull when.

① EOL is given ② Pt. on the same line is also given.

(3) another pt. on same at some r distance from given Pt is asked then think about Par. form.



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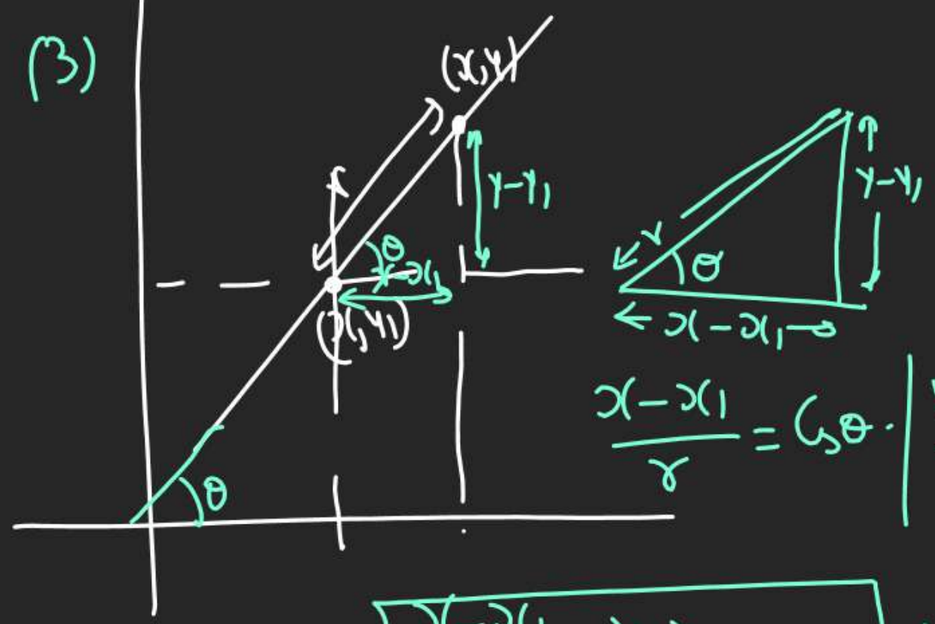
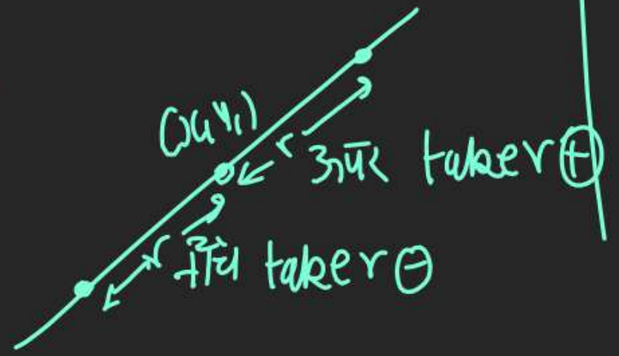
(3)



$\frac{x-x_1}{r} = \cos\theta$ | $\frac{y-y_1}{r} = \sin\theta$

(4) $\boxed{\frac{x-x_1}{\cos\theta} = \frac{y-y_1}{\sin\theta} = r}$ is Parametric form of line

(5) Sign convention.



6) (x_1, y_1) old Pt. ⟶ (x, y) New pt. at distance r at angle θ

$$\begin{cases} x = x_1 + r\cos\theta \\ y = y_1 + r\sin\theta \end{cases}$$

Q If A(2,0), B(4,2) & line AB is Rotated ACW at angle 15° about A then B shifted to B' find B'?

① $AB = \sqrt{(2-0)^2 + (4-2)^2}$
$= \sqrt{4+4}$
$= 2\sqrt{2}$

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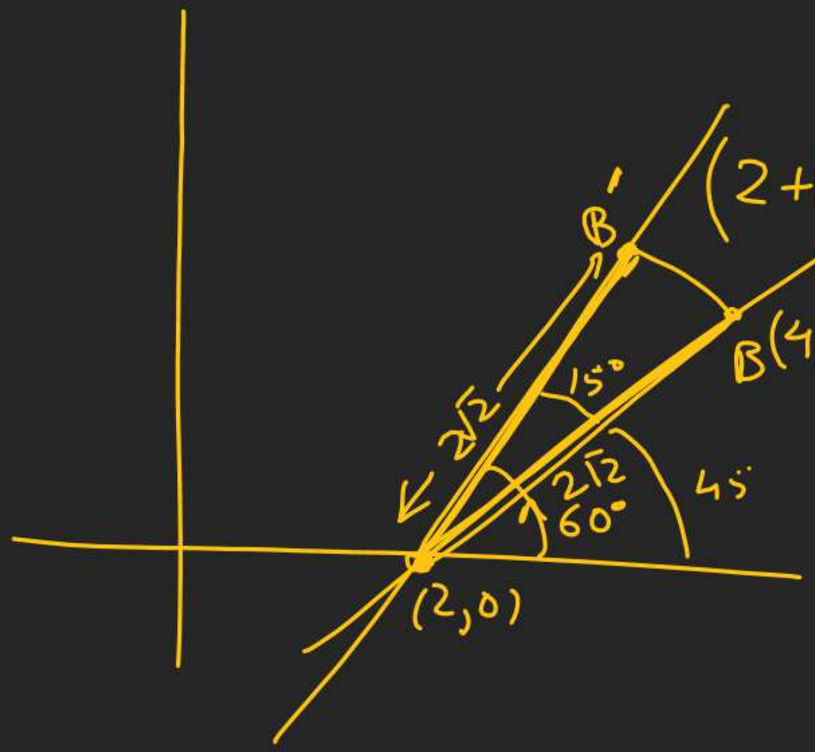

$(2+2\sqrt{2}\cos 60^\circ,\ 0+2\sqrt{2}\sin 60^\circ)$

$= \left(2+\frac{2\sqrt{2}}{2},\ \frac{2\sqrt{2}\times\sqrt{3}}{2}\right)$

$= (2+\sqrt{2},\sqrt{6})$

Various for

1 - 7

(B) Par. 9, 12, 13

14, 18